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Flood Boundary and Floodway Map Index
Flood Boundary and Floodway Map

PUBLISHED SEPARATELY:

Flood Insurance Rate Map Index
Flood Insurance Rate Map

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FLOOD INSURANCE STUDY

CITY OF WAVERLY,
HUMPHREYS COUNTY,
TENNESSEE

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the City of Waverly and its extraterritorial limits, Humphreys County, Tennessee, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and assist the community in its efforts to promote sound flood plain management. Minimum flood plain management requirements for participation in the National Flood Insurance Program are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the state (or other jurisdictional agency) will be able to explain them.

This Flood Insurance Study was prepared by compiling existing hydrologic and hydraulic technical and scientific data prepared originally for purposes other than the National Flood Insurance Program. The data were identified as the best available at the time of compilation of this Flood Insurance Study and should depict the general conditions of the flooding sources with relative accuracy. The Federal Emergency Management Agency (FEMA) performed a cursory review and accepted the data as valid for purposes of this Flood Insurance Study and the National Flood Insurance Program. However, if better information is known to exist or has been developed since the date of this report, the information should be immediately forwarded to the Natural and Technological Hazards Division, Federal Emergency Management Agency, Atlanta, Georgia for consideration for revision of this study.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were obtained from a Tennessee Valley Authority (TVA) flood report (Reference 1).

1.3 Coordination

On August 2, 1984, the results of this Flood Insurance Study were reviewed and accepted at a final coordination meeting attended by representatives of the community and FEMA.

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2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the City of Waverly and its extraterritorial limits, Humphreys County, Tennessee. The area of study is shown on the Vicinity Map (Figure 1).

The areas studied by detailed methods were selected based upon the extent and validity of available existing hydrologic and hydraulic data.

The following streams were studied in detail:

a. Trace Creek, from the downstream corporate limits to the extraterritorial limits;

b. Tributary A, from the mouth to about 0.8 mile upstream;

c. Tributary B, from the mouth to Little Richland Road;

d. Tributary C, from the mouth to about 0.86 mile upstream; and,

e. Tributary D, from the mouth to about 1.7 miles upstream.

2.2 Community Description

The City of Waverly is centrally located in Humphreys County in the midwestern portion of Tennessee. The city is completely surrounded by the unincorporated areas of Humphreys County. In 1980, the population of Waverly was reported to be 4,405 (Reference 2).

The temperature in Waverly varies from a monthly average low of 39 degrees Fahrenheit (F.) in January to 80 degrees F. in July. Precipitation averages 51 inches per year (Reference 3).

2.3 Principal Flood Problems

The largest known flood on Trace Creek occurred in January 1937 and, based on high water marks, reached elevation 495.5 feet National Geodetic Vertical Datum of 1929 (NGVD) at the old sewage treatment plant below Clydeton Road. A large flood in April 1973 reached elevation 494.5 feet NGVD at the same location, while the November 1957 flood crested at elevation 492.0 feet NGVD. Smaller floods occurred in March 1948, January 1956, May 1967, and December 1978.

Additional information regarding past floods on Trace Creek and its tributaries may be found in two published TVA reports (References 4 and 5).

2.4 Flood Protection Measures

Flood protection measures do not exist within the study area. No flood control regulations are in effect within the study area.

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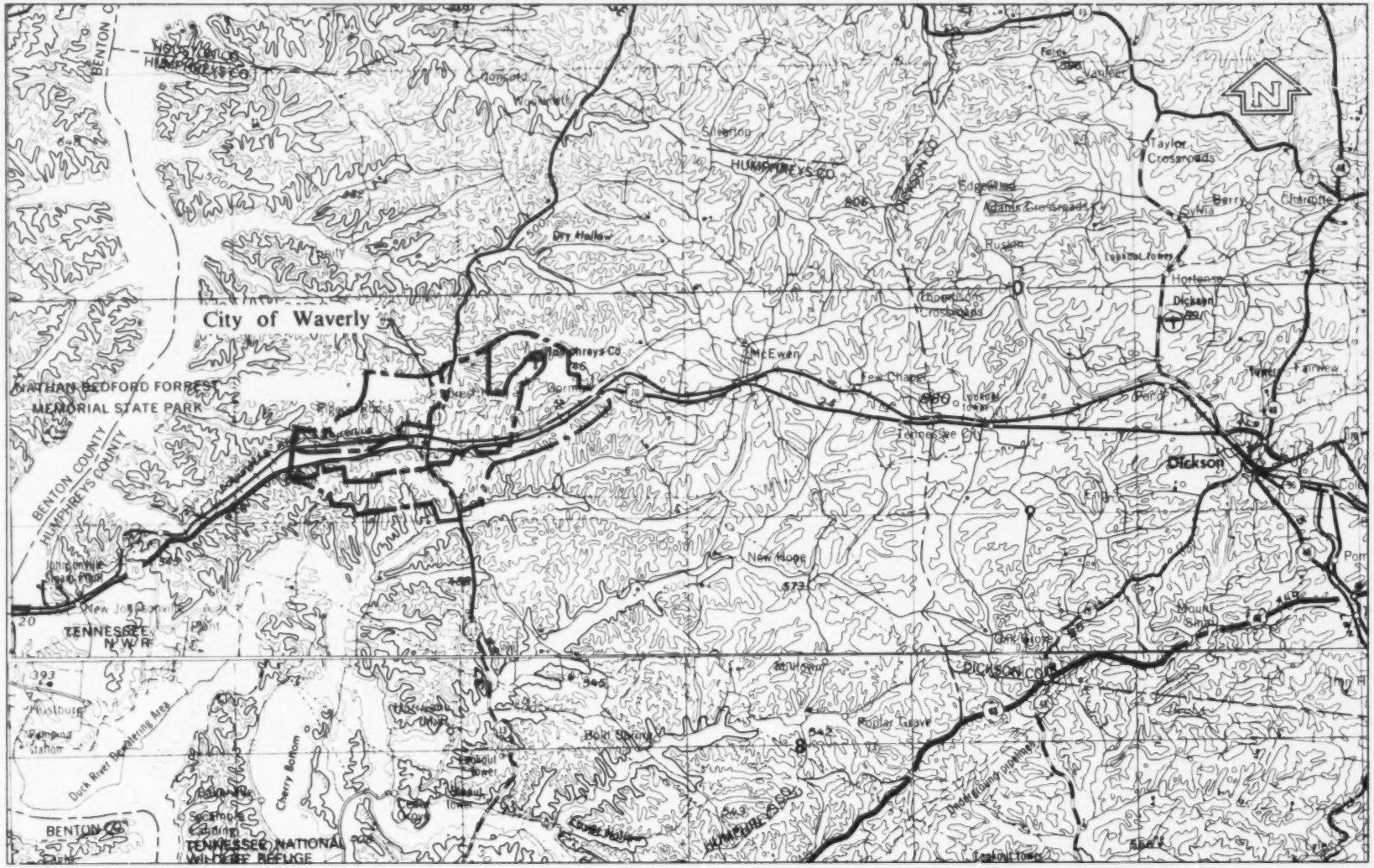

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF WAVERLY, TN
(HUMPHREYS CO.)

APPROXIMATE SCALE

4 0 4 8 12 MILES

VICINITY MAP

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for flood plain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each riverine flooding source studied in detail affecting the community.

Computed flood discharges for Trace Creek are based on stream gage records near Denver, Tennessee located about 4.5 miles downstream of Waverly, and observed flooding upstream. Computed discharges for the four tributaries are based on records from similar watersheds in the region (Reference 6). All stream gage analyses follow standard procedures outlined in the U.S. Water Resources Council Bulletin No. 17A (Reference 7).

Peak discharges for the 10-, 50-, 100-, and 500-year floods of each flooding source studied in detail in the community are shown in Table 1.

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (SQ MILES)	PEAK DISCHARGE (CFS) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
TRACE CREEK at Brown Town Road	23.8	5,900	8,300	9,300	11,700
TRIBUTARY A at mouth	0.42	250	400	470	650
TRIBUTARY B at mouth	0.55	300	480	560	780
TRIBUTARY C at mouth	0.87	420	670	780	1,100
TRIBUTARY D at mouth	1.82	710	1,100	1,300	1,800

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3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

The cross sections used for this study were obtained by photogrammetric techniques (Reference 8). All bridge elevation data and structural geometry used in the hydraulic analysis were obtained by field surveys.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles. For stream segments for which a floodway was computed (Section 4.2), selected cross-section locations are also shown on the Flood Boundary and Floodway Map.

Roughness coefficients for the streams studied in detail are contained in the following table:

	Manning's "n"	
Stream	Channel	Overbank
Trace Creek	0.04 - 0.055	0.06 - 0.16
Tributary A	0.04 - 0.06	0.05 - 0.15
Tributary B	0.03 - 0.035	0.035 - 0.18
Tributary C	0.04 - 0.055	0.06 - 0.12
Tributary D	0.03 - 0.035	0.06 - 0.11

Water-surface elevations were computed using the U.S. Army Corps of Engineers HEC-2N step-backwater computer program (Reference 9). Starting water-surface elevations for the streams in this study were obtained by the slope-area method.

Flood profiles were drawn showing the computed water-surface elevations for floods of the selected recurrence intervals.

The hydraulic analyses for this study are based only on the effects of unobstructed flow. The flood elevations shown on the profiles are, thus, considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

All elevations are referenced to the NGVD. Elevation reference marks used in this study are shown on the maps.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages state and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study produces maps designed to assist communities in developing flood plain management measures.

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4.1 Flood Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for flood plain management purposes. The 0.2 percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the 100- and 500-year flood plain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were developed using aerial photographs at a scale of 1:9600 (Reference 8). On Trace Creek upstream of U.S. Highway 70, the boundaries were interpolated using topographic maps at a scale of 1:24000 with a contour interval of 20 feet (Reference 10).

The 100- and 500-year flood plain boundaries are shown on the Flood Boundary and Floodway Map. In cases where the 100- and 500-year flood plain boundaries are close together, only the 100-year flood plain boundary has been shown. Small areas within the flood plain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

4.2 Floodways

Encroachment on flood plains, such as structures and fill, reduces the flood-carrying capacity, increases the flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood plain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent flood plain areas that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced.

The floodways presented in this study were computed on the basis of engineering judgment. The results of these computations were tabulated at selected cross sections for each stream segment for which a floodway was computed and are presented in Table 2, Floodway Data. A floodway was not computed for Trace Creek upstream of U.S. Highway 70.

As shown on the Flood Boundary and Floodway Map, the floodway boundaries were computed at cross sections. Between cross sections, the boundaries were interpolated. In cases where the floodway and the 100-year flood plain boundaries are either close together or collinear, only the floodway boundary has been shown.

The area between the floodway and the 100-year flood plain boundaries is termed the floodway fringe. The floodway fringe thus encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 2.

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
TRACE CREEK								
A	8.17	260[2]	1938	5.0	442.2	442.2	442.9	0.7
B	8.70	173	1156	8.2	448.7	448.7	449.2	0.5
C	9.22	400	2457	3.8	459.1	459.1	459.8	0.7
D	9.80	260	989	9.4	467.9	467.9	468.1	0.2
E	10.41	214	1285	7.0	479.6	479.6	479.6	0.0
F	10.65	180	1208	7.4	483.8	483.8	484.3	0.5
G	10.88	196	1602	5.5	488.3	488.3	488.7	0.4
H	11.29	200	1370	6.3	495.3	495.3	496.0	0.7
I	11.67	180	1293	6.5	502.7	502.7	503.6	0.9
J	11.99	150	1016	8.2	508.6	508.6	509.1	0.5
K	12.27	130	1111	7.4	513.6	513.6	514.1	0.5
L	12.49	150	1238	6.6	517.3	517.3	517.7	0.4
M	12.76	170	1355	6.1	522.1	522.1	522.4	0.3
N	13.03	117	896	8.9	526.0	526.0	526.4	0.4
O	13.38	142	1201	6.5	533.5	533.5	533.8	0.3
P	13.64	139	1119	6.8	537.7	537.7	538.2	0.5
Q	14.02	140	780	9.7	543.6	543.6	544.1	0.5
R	14.52	480	2569	2.9	556.5	556.5	557.4	0.9
S	14.75	232	1494	5.0	559.2	559.2	560.2	1.0
T	15.02	410	2006	3.7	566.1	566.1	566.6	0.5
U	15.88	272	1628	4.6	583.0	583.0	583.5	0.5
V	16.00	380	1981	3.8	585.3	585.3	586.0	0.7

[1]MILES ABOVE MOUTH
[2]THIS WIDTH EXTENDS BEYOND CORPORATE LIMITS

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF WAVERLY, TN
(HUMPHREYS CO.)

FLOODWAY DATA

TRACE CREEK

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
TRIBUTARY A								
A	0.14	31	62	7.1	510.2	510.2	510.3	0.1
B	0.32	65	159	2.6	520.9	520.9	521.0	0.1
C	0.38	60	57	7.1	522.4	522.4	522.8	0.4
D	0.52	22	66	5.7	535.5	535.5	535.9	0.4
E	0.60	22	53	6.8	544.2	544.2	544.7	0.5
F	0.71	22	71	4.8	550.7	550.7	551.2	0.5
G	0.81	22	45	7.1	555.7	555.7	555.7	0.0
TRIBUTARY B								
A	0.08	36	52	10.5	519.3	518.6[2]	518.6	0.0
B	0.11	30	86	6.2	520.8	520.8	520.8	0.0
C	0.15	188	611	0.9	527.4	527.4	528.4	1.0
D	0.19	29	126	4.1	527.4	527.4	528.4	1.0
E	0.24	39	152	3.3	532.0	532.0	532.4	0.4
F	0.36	35	171	2.8	539.6	539.6	539.6	0.0
G	0.41	30	121	3.9	544.0	544.0	544.1	0.1
H	0.46	30	79	5.9	545.8	545.8	545.8	0.0
I	0.54	23	75	5.8	551.0	551.0	551.0	0.0
J	0.64	20	97	4.3	560.9	560.9	560.9	0.0
K	0.74	15	41	9.5	565.7	565.7	565.8	0.1

[1]MILES ABOVE MOUTH
[2]ELEVATIONS WITHOUT CONSIDERING BACKWATER EFFECT FROM TRACE CREEK

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF WAVERLY, TN
(HUMPHREYS CO.)

FLOODWAY DATA

TRIBUTARY A — TRIBUTARY B

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
TRIBUTARY C								
A	0.04	140	112	6.9	534.9	534.9	535.4	0.5
B	0.05	152	267	2.9	536.2	536.2	537.1	0.9
C	0.11	34	157	4.7	540.7	540.7	541.0	0.3
D	0.15	35	158	4.6	541.1	541.1	541.8	0.7
E	0.27	32	77	9.0	547.9	547.9	547.9	0.0
F	0.40	23	78	8.3	557.0	557.0	557.2	0.2
G	0.44	22	121	5.3	561.6	561.6	561.8	0.2
H	0.65	140	84	6.8	572.3	572.3	572.3	0.0
I	0.86	42	116	4.3	586.8	586.8	587.4	0.6
TRIBUTARY D								
A	0.37	65	178	6.9	583.2	583.2	583.6	0.4
B	0.55	65	265	4.5	593.1	593.1	593.9	0.8
C	0.75	55	173	6.7	601.6	601.6	602.3	0.7
D	0.94	50	127	8.9	609.4	609.4	609.4	0.0
E	1.10	100	323	3.4	620.9	620.9	621.9	1.0
F	1.38	45	96	6.9	634.9	634.9	634.9	0.0
G	1.70	20	41	8.0	662.4	662.4	662.4	0.0

[1]MILES ABOVE MOUTH

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF WAVERLY, TN

(HUMPHREYS CO.)

FLOODWAY DATA

TRIBUTARY C—TRIBUTARY D

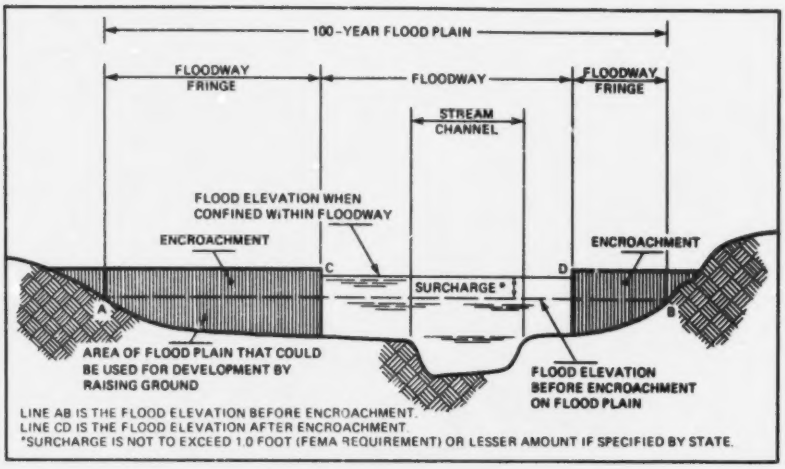
100-YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE *
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE AB IS THE FLOOD ELEVATION BEFORE ENCROACHMENT.
LINE CD IS THE FLOOD ELEVATION AFTER ENCROACHMENT.
*SURCHARGE IS NOT TO EXCEED 1.0 FOOT (FEMA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE.

FIGURE 2 - Floodway Schematic

The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

5.0 INSURANCE APPLICATION

To establish actuarial insurance rates, data from the engineering study must be transformed into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors, and flood insurance zone designations for each flooding source studied in detail affecting the City of Waverly.

5.1 Reach Determinations

Reaches are defined as sections of flood plain that have relatively the same flood hazard, based on the weighted average difference in water-surface elevations between the 10- and 100-year floods. This difference may not have a variation greater than that indicated in the following table for more than 20 percent of the reach:

Average Difference Between 10- and 100-year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot
7.1 to 12 feet	2.0 feet
More than 12 feet	3.0 feet

The locations of the reaches determined for the riverine flooding sources of the City of Waverly are shown on the Flood Profiles and summarized in Table 3, Flood Insurance Zone Data.

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5.2 Flood Hazard Factors

The Flood Hazard Factor (FHF) is used to establish relationships between depth and frequency of flooding in any reach. This relationship is then used with depth-damage relationships for various classes of structures to establish actuarial insurance rate tables.

The FHF for a riverine reach is the weighted average difference between the 10- and 100-year flood water-surface elevations rounded to the nearest 0.5 foot, multiplied by 10, and shown as a 3-digit code. For example, if the difference between elevations is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference is greater than 10.0 feet, it is rounded to the nearest whole foot.

5.3 Flood Insurance Zones

Flood insurance zones and zone numbers are assigned based on the type of flood hazard and the FHF, respectively. A unique zone number is associated with each possible FHF and varies from 1 for a FHF of 005 to a maximum of 30 for a FHF of 200 or greater.

Zones A2-A4:	Special Flood Hazard Areas inundated by the 100-year flood, with base flood elevations shown, and zones subdivided according to FHFs.
Zone B:	Areas between the Special Flood Hazard Areas and the limits of the 500-year flood; areas that are protected from the 100- and 500-year floods by dike, levee, or other water control structure; areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and, areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.
Zone C:	Areas of minimal flooding; not subdivided.

Flood elevation differences, FHFs, flood insurance zones, and base flood elevations for each flooding source studied in detail in the community are summarized in Table 3, Flood Insurance Zone Data.

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION[3] (FEET NGVD)
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
TRACE CREEK							
REACH 1	0003, 0004,0005,0006	−1.7	−0.4	0.9	015	A3	VARIES—SEE MAP
TRIBUTARY A							
REACH 1	0005	−0.8	−0.2	0.4	010	A2	VARIES—SEE MAP
TRIBUTARY B							
REACH 1	0005	−1.5	−0.4	1.0	015	A3	VARIES—SEE MAP
REACH 2	0005	−2.0	−0.7	0.8	020	A4	VARIES—SEE MAP
REACH 3	0005	−1.2	−0.4	0.8	010	A2	VARIES—SEE MAP
TRIBUTARY C							
REACH 1	0005	−1.1	−0.3	0.7	010	A2	VARIES—SEE MAP
TRIBUTARY D							
REACH 1	0003,0006	−1.7	−0.6	0.9	015	A3	VARIES—SEE MAP

[1]FLOOD INSURANCE RATE MAP PANEL
[2]WEIGHTED AVERAGE
[3]ROUNDED TO NEAREST FOOT

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF WAVERLY, TN
(HUMPHREYS CO.)

FLOOD INSURANCE ZONE DATA

TRACE CREEK —
TRIBUTARY A—TRIBUTARY B—TRIBUTARY C—TRIBUTARY D

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the City of Waverly is, for insurance purposes, the principal product of the Flood Insurance Study. This map contains the official delineation of flood insurance zones and base flood elevation lines. Base flood elevation lines for riverine flooding sources show the locations of the expected whole-foot water-surface elevations of the base (100-year) flood. The base flood elevations and zone numbers are used by insurance agents, in conjunction with structure elevations and characteristics, to assign actuarial insurance rates to structures and contents insured under the National Flood Insurance Program.

6.0 OTHER STUDIES

A flood report of the City of Waverly has been published (Reference 1). This Flood Insurance Study is in complete agreement with that flood report.

The technical information provided in the 1957 and 1975 flood reports by the TVA (References 4 and 5) is invalid and should not be used. However, the reports do contain valuable information on historic flooding.

Due to its more detailed analysis, this Flood Insurance Study supersedes the previously printed Flood Hazard Boundary Map for City of Waverly (Reference 11).

7.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, Federal Emergency Management Agency, 1371 Peachtree Street, NE., Suite 736, Atlanta, Georgia 30309.

8.0 REFERENCES AND BIBLIOGRAPHY

1. Tennessee Valley Authority, Office of Economic and Community Development, Floods on Trace Creek and Four Unnamed Tributaries in the Vicinity of Waverly, Tennessee, Knoxville, Tennessee, November 1981.

2. U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population, Number of Inhabitants, Tennessee, Washington, D.C., January 1982.

3. ————, National Oceanic and Atmospheric Administration, Environmental Data Services, Climatological Data for Tennessee, Asheville, North Carolina.

4. Tennessee Valley Authority, Division of Water Control Planning, Report No. 0-5796, Floods on Trace Creek in Vicinity of Waverly, Tennessee, Knoxville, Tennessee, December 1957.

5. ————, Floods on Trace Creek and Four Unnamed Tributaries in Vicinity of Waverly, Tennessee, Knoxville, Tennessee, May 1975.

6. U.S. Geological Survey, Technique for Estimating Magnitude and Frequency of Floods in Tennessee, 1976.

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7. U.S. Water Resources Council, Bulletin No. 17A, Guidelines for Determining Flood Flow Frequency, revised June 1977.

8. Tennessee Valley Authority, Aerial Photographs, Scale 1:9600, February 1980.

9. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2N Water-Surface Profiles Generalized Computer Program, Davis, California, November 1976, updated 1977.

10. U.S. Geological Survey, Tennessee Valley Authority, Topographic Maps, Scale 1:24000, Contour Interval 20 feet: Waverly, Tennessee, 1967.

11. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, City of Waverly, Tennessee, July 1976.

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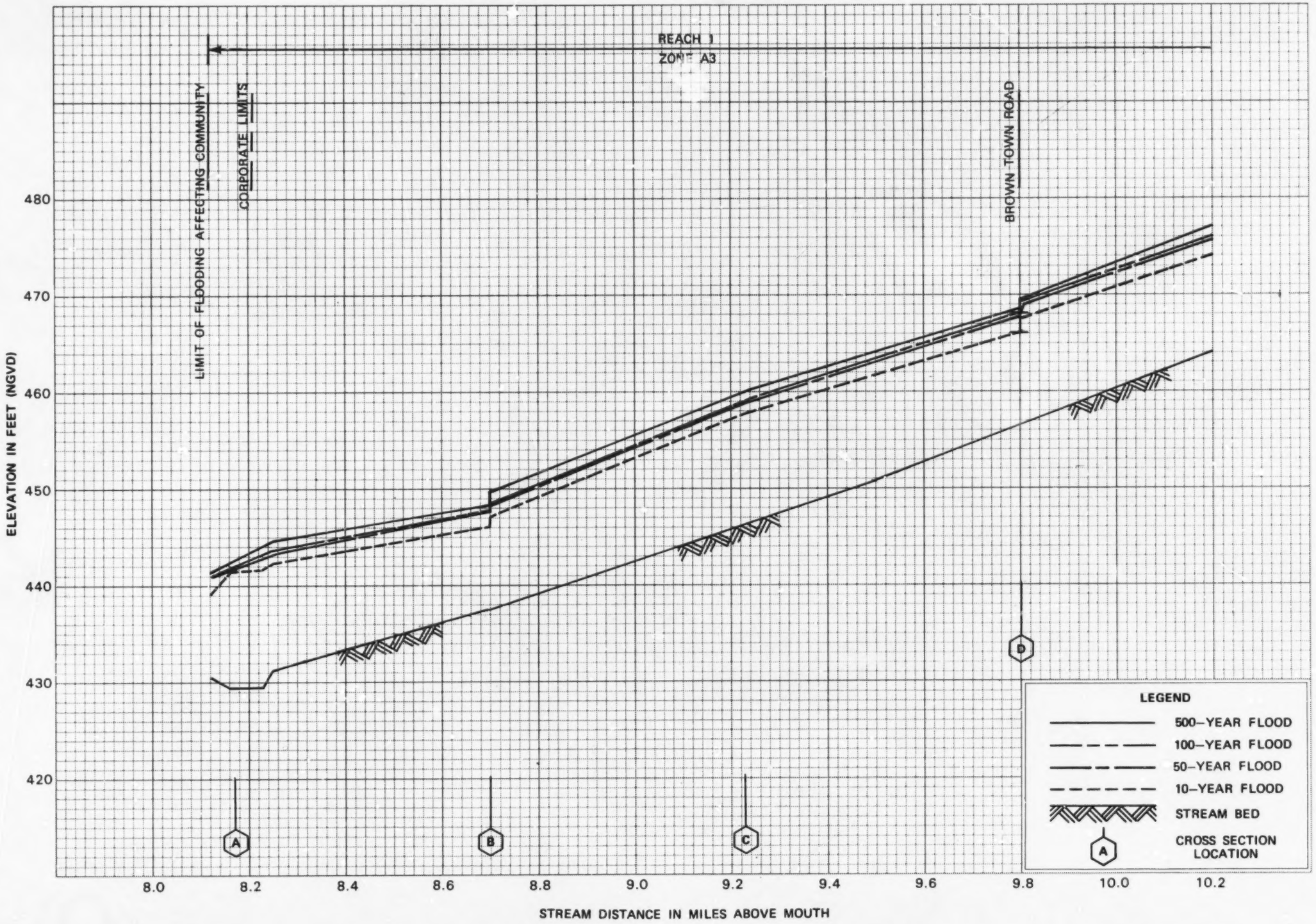

FLOOD PROFILES

TRACE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF WAVERLY, TN
(HUMPHREYS CO.)

01P

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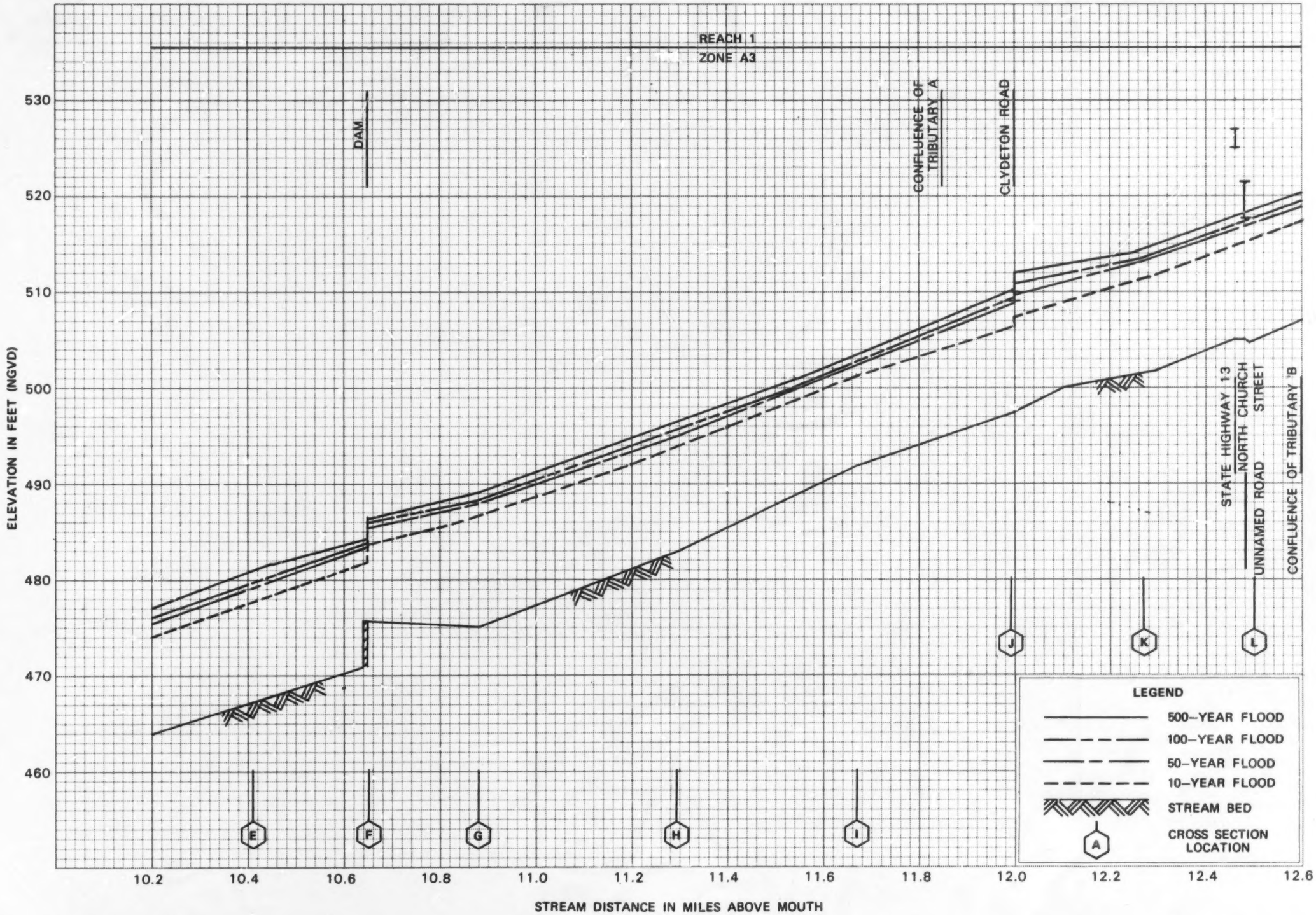

FLOOD PROFILES

TRACE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF WAVERLY, TN
(HUMPHREYS CO.)

02P

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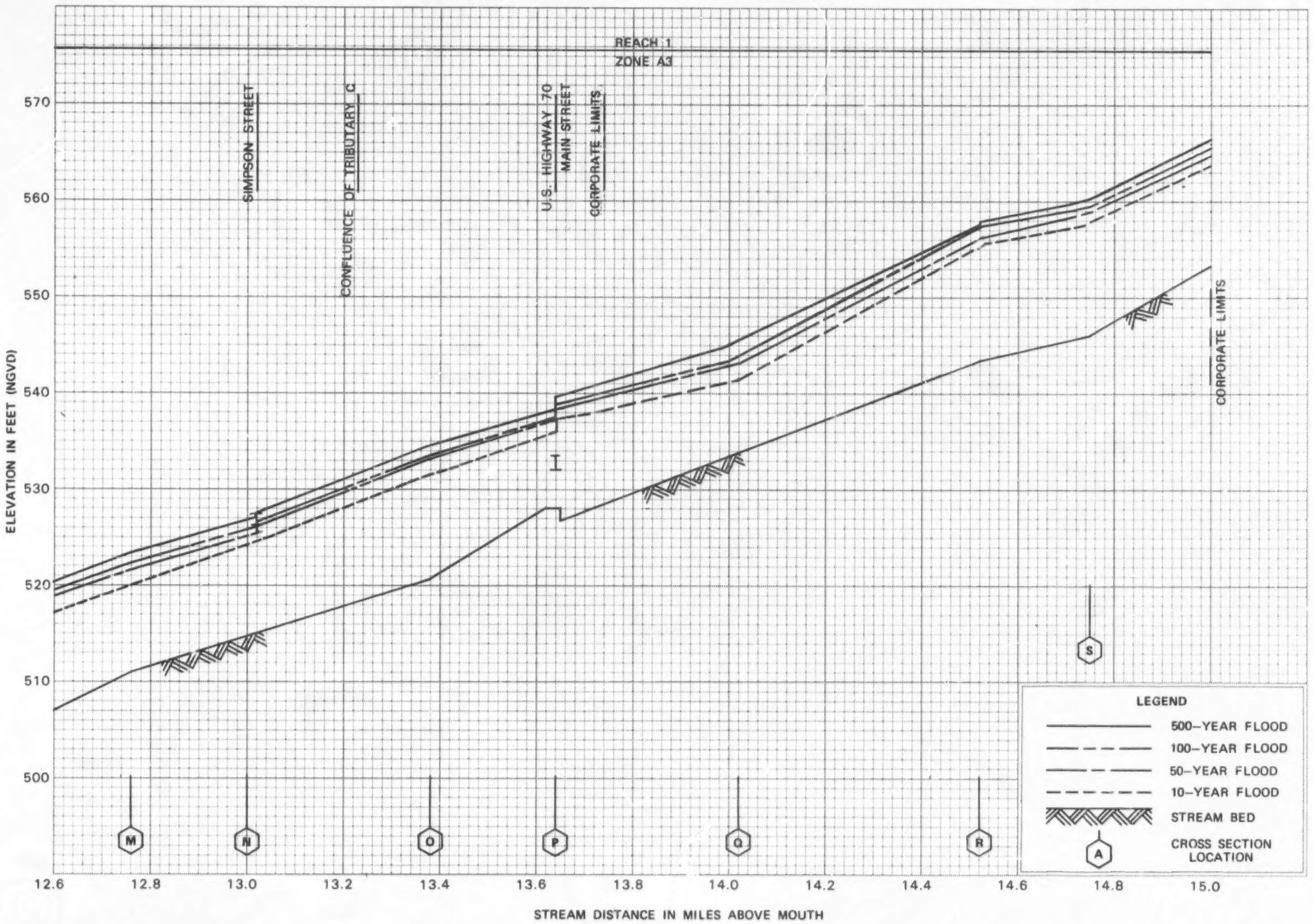

FLOOD PROFILES

TRACE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF WAVERLY, TN
(HUMPHREYS CO.)

03P

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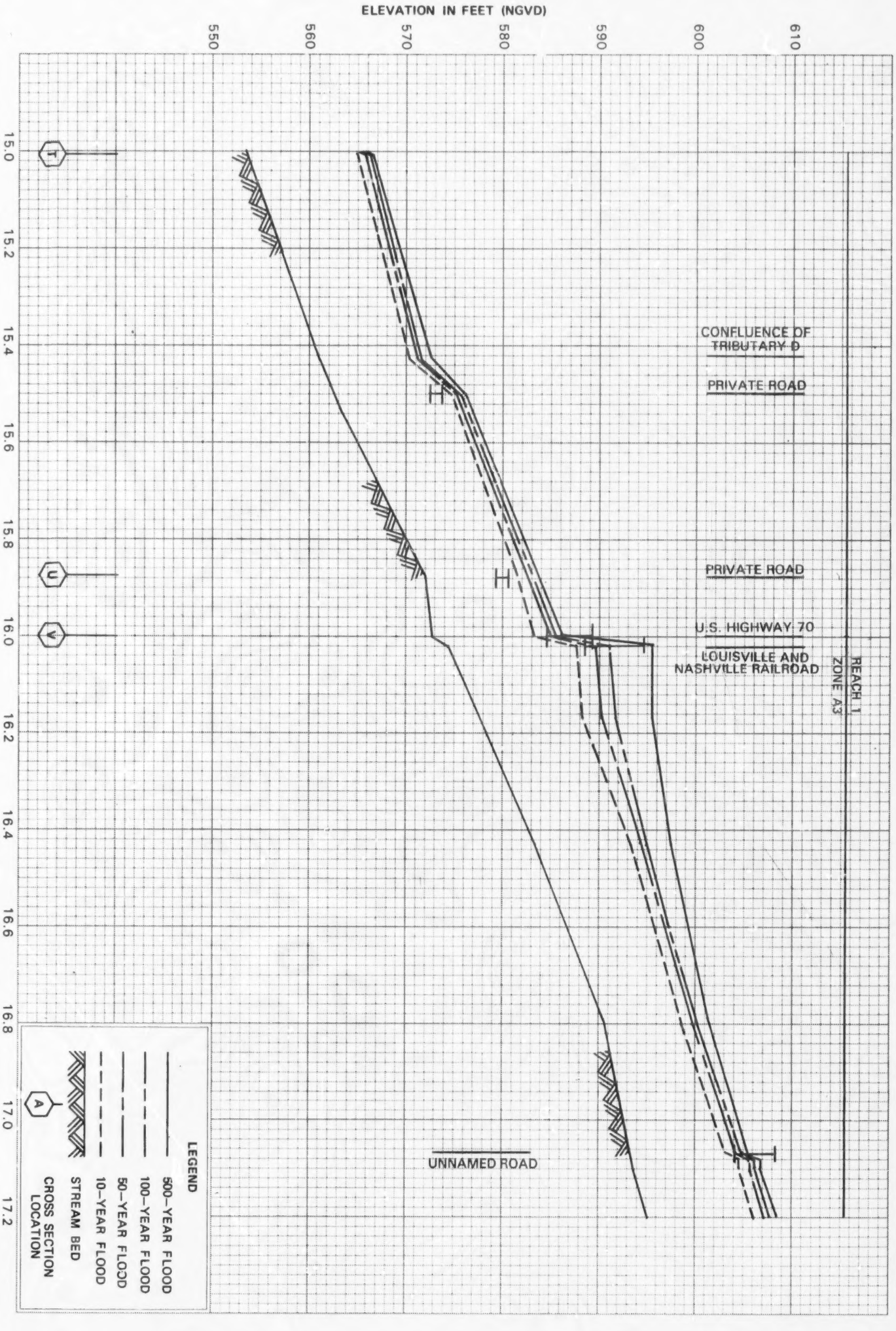
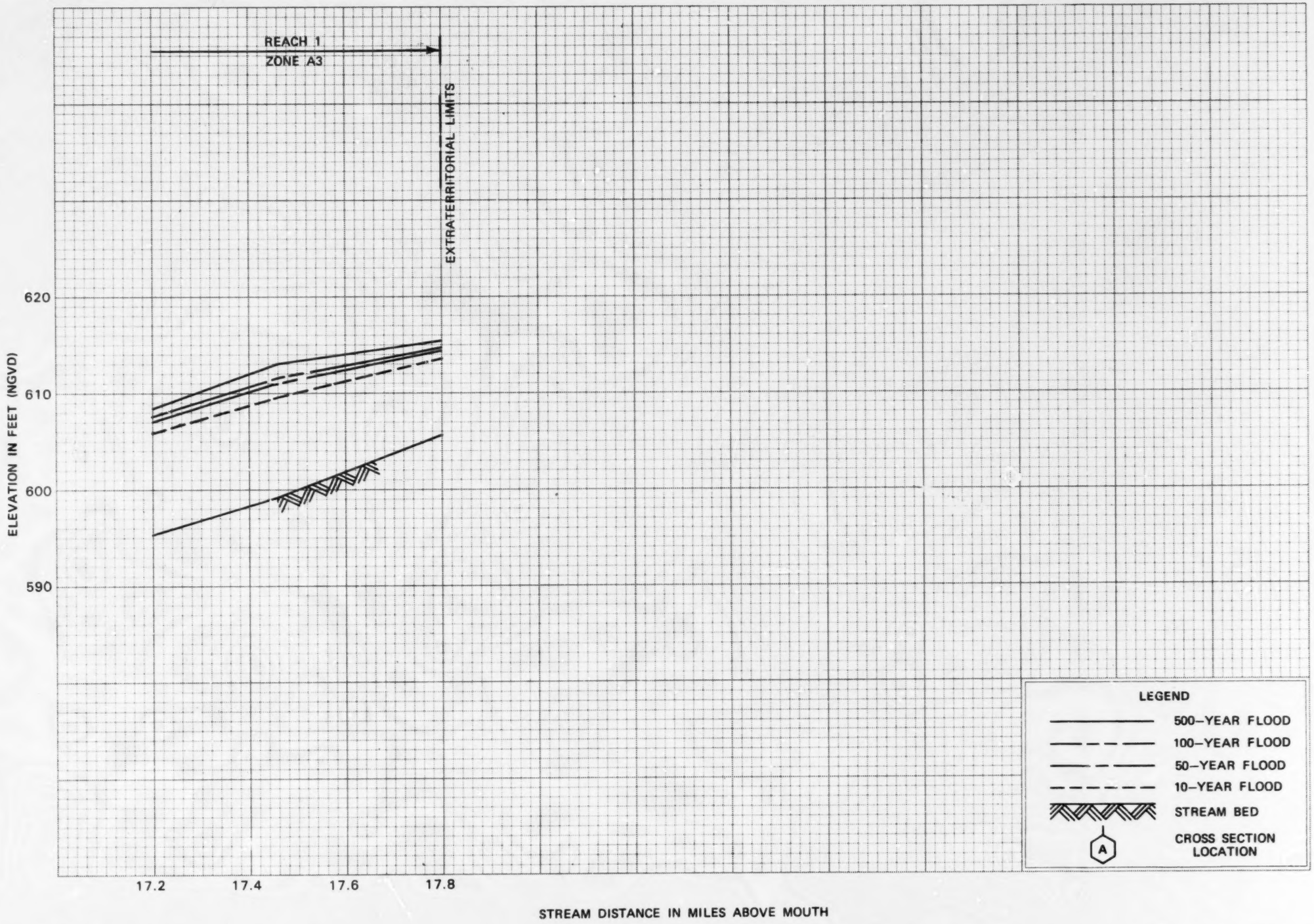


04P	FEDERAL EMERGENCY MANAGEMENT AGENCY CITY OF WAVERLY, TN (HUMPHREYS CO.)	FLOOD PROFILES TRACE CREEK



FLOOD PROFILES

TRACE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF WAVERLY, TN

(HUMPHREYS CO.)

05P

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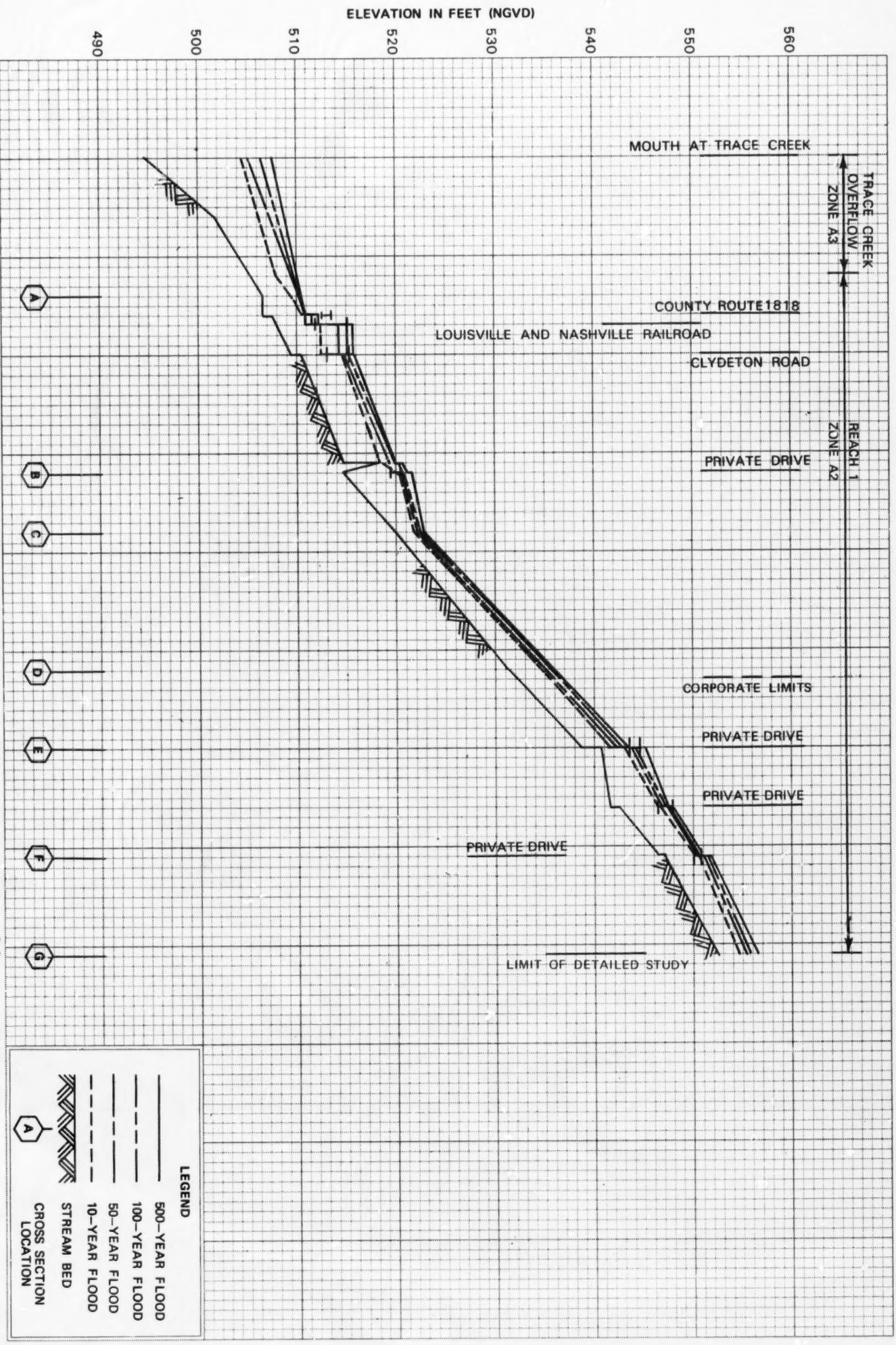

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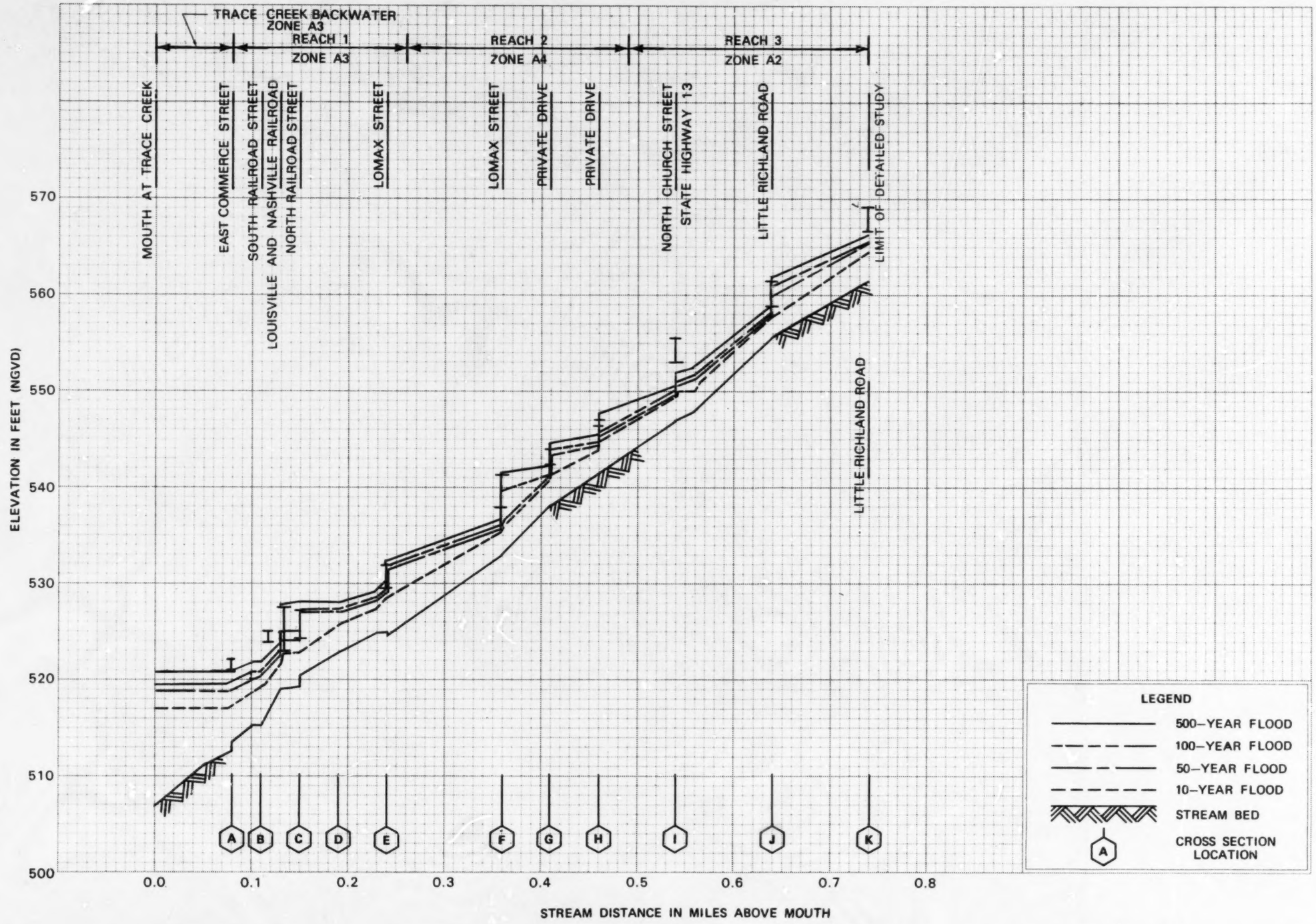

FLOOD PROFILES

TRIBUTARY B

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF WAVERLY, TN
(HUMPHREYS CO.)

07P

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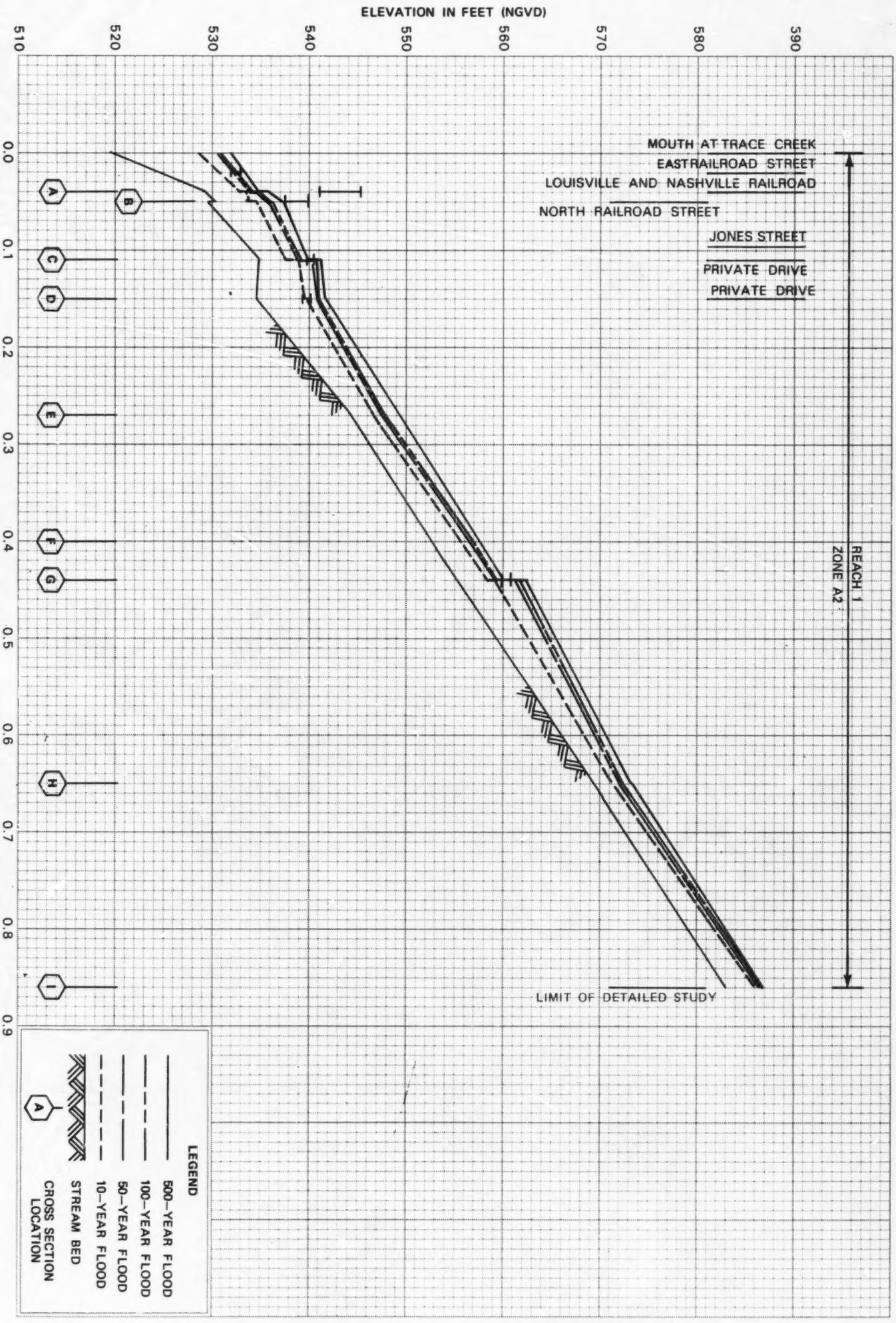

08P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF WAVERLY, TN

(HUMPHREYS CO.)

FLOOD PROFILES

TRIBUTARY C

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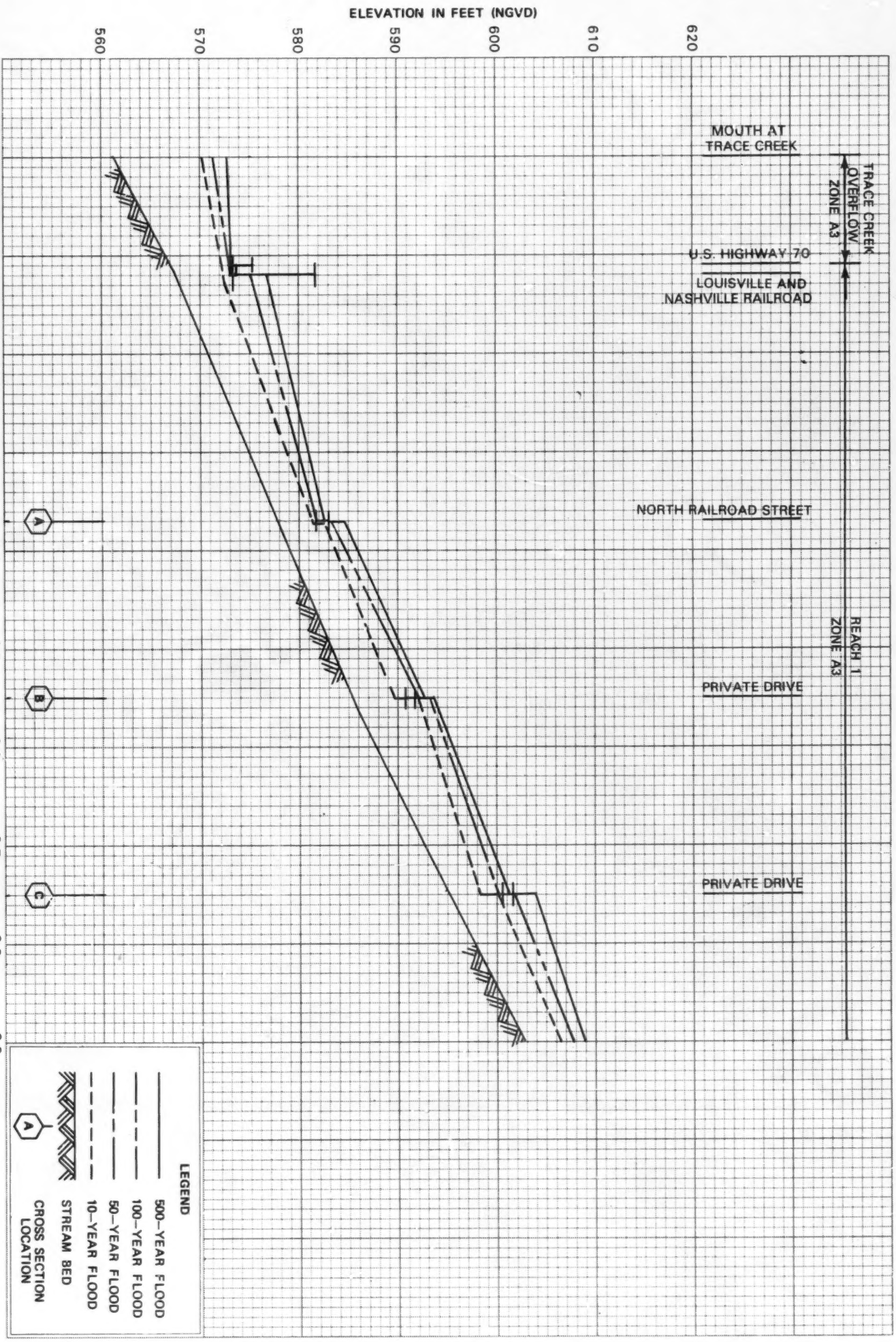
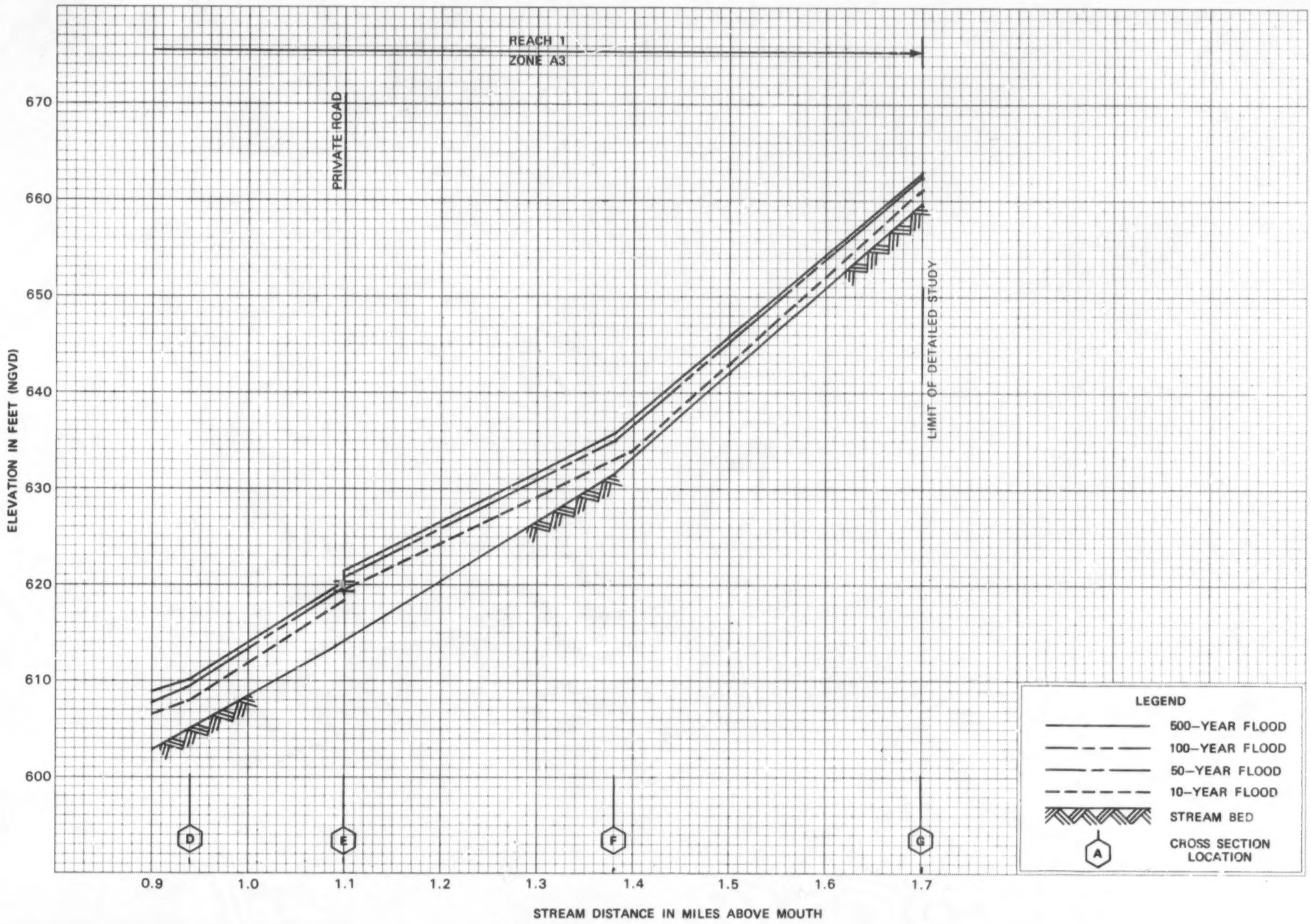


09P	FEDERAL EMERGENCY MANAGEMENT AGENCY CITY OF WAVERLY, TN (HUMPHREYS CO.)	FLOOD PROFILES TRIBUTARY D



FLOOD PROFILES

TRIBUTARY D

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF WAVERLY, TN

(HUMPHREYS CO.)

10P

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